

THERE IS CLAIMED:

1. A circuit for conditioning a power supply for which a graph of the power supplied as a function of the voltage at the terminals of said power supply features a maximum, said conditioning circuit comprising:
 - a power cell with one input adapted to be supplied with power by said power supply and one output adapted to supply power to a load, and
 - a circuit for controlling said power cell by means of a control signal applied to said power cell to slave the input voltage of said cell, in which conditioning circuit, the current-voltage characteristic of said power source being an exponential function, said control circuit includes:
 - calculation means comprising means for receiving instantaneous measurements of points on said characteristic and a program adapted to determine the equation of said characteristic using a predetermined first method on the basis of four points on the characteristic and to determine said maximum to serve as an operation reference by a second method, and
 - control means for supplying said control signal representative of the difference between the required reference voltage calculated by said calculation module and the instantaneous voltage at the output of the power supply so as to cancel out said control signal.
2. The circuit claimed in claim 1 wherein, said current-voltage characteristic of said power supply being of the form:
$$i = i_{SC} - i_R(\exp(av) - 1),$$
said first method is adapted to determine the parameters of the above equation from the following equations:
$$a = \frac{1}{v_1 - v_2} \text{Log}\left(\frac{di_1}{di_2} \frac{dv_2}{dv_1}\right)$$
$$i_R = -\frac{di}{dv} \frac{1}{a \exp(av)}$$
$$i_{SC} = i - i_R(\exp(av) - 1).$$
3. The circuit claimed in claim 1 wherein said second method adapted to determine said maximum uses the Newton-Raphson method applied to the equation of said characteristic.
4. The circuit claimed in claim 1 including a current sensor adapted to

supply the instantaneous current in a regular manner and wherein said calculation module is adapted to launch said program as soon as the current variation between the instantaneous current and the maximum power point current exceeds the predetermined threshold.

5. The circuit claimed in claim 1 wherein said control circuit includes an adder for comparing the instantaneous voltage at the output of said power supply and the voltage generated by said calculation means, said adder delivering at its output a signal representative of the difference between the latter magnitudes at the input of said control means.
6. A solar generator comprising a power supply for which a graph of the power supplied as a function of the voltage at the terminals of said power supply features a maximum, which solar generator is adapted to be conditioned by the circuit claimed in claim 1.
7. A method of using a conditioning circuit to condition a power supply for which a graph of the power supplied as a function of the voltage at the terminals of said power supply features a maximum, said conditioning circuit comprising:
 - a power cell with one input adapted to be supplied with power by said power supply and one output adapted to supply power to a load, and
 - a circuit for controlling said power cell by means of a control signal applied to said power cell to slave the input voltage of said cell, which conditioning method includes, the current-voltage characteristic of said power source being an exponential function:
 - a step of determining the equation of said current-voltage characteristic using a predetermined first method and four points on said characteristic,
 - a step of using a second method to determine said maximum to serve as an operation reference, and
 - a step of transmitting said control signal representative of the difference between the calculated reference and the instantaneous voltage at the output of said power supply in such a manner as to cancel out said control signal.
8. The method claimed in claim 7 wherein, said current-voltage characteristic of said power supply being of the form:

$$i = i_{SC} - i_R(\exp(av) - 1),$$

said first method is adapted to determine the parameters of the above equation from the following equations:

$$a = \frac{1}{v_1 - v_2} \text{Log}\left(\frac{di_1}{di_2} \frac{dv_2}{dv_1}\right)$$

$$i_R = -\frac{di}{dv} \frac{1}{a \exp(av)}$$

$$i_{sc} = i - i_R(\exp(av) - 1).$$

9. The method claimed in claim 7 wherein said second method adapted to determine said maximum uses the Newton-Raphson method applied to the equation of said characteristic.
10. The method claimed in claim 7 wherein, said conditioning circuit including a current sensor adapted to supply the instantaneous current in a regular manner, said method launches said program as soon as the current variation between said instantaneous current and said current corresponding to said maximum exceeds a predetermined threshold.
11. The method claimed in claim 7 wherein said program uses four points on said characteristic, one of which is said maximum, and the other three being obtained by application of successive voltage levels at the output of said calculation means and by sensing corresponding currents.